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32. The collection of claim ²~~27~~, wherein the oligonucleotide sequences having the same number of nucleotides are 9 nucleotides long.

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33. The collection of claim ²~~27~~, wherein the oligonucleotide sequences having the same number of nucleotides are at least 10 nucleotides long.

34. The collection of claim 27, wherein at least 10,000 of all the possible oligonucleotide sequences having the same number of nucleotides are attached to a different single bead.

35. The collection of claim 27, wherein at least 100,000 of all the possible oligonucleotide sequences having the same number of nucleotides are attached to a different single bead.

36. The collection of claim 27, wherein at least 1,000,000 of all the possible oligonucleotide sequences having the same number of nucleotides are attached to a different single bead.

¹² 37. The collection of claim ¹~~26~~, wherein the polymer is selected from the group consisting of polynucleotides and polypeptides.

38. The collection of claim 26, wherein the polymer is a protein selected from the group consisting of enzyme binding sites and antibody binding sites.

39. The collection of claim 26, wherein a plurality of beads are comprised of a glass surface and amines of poly-aminopropyltriethoxysilane thereon, and polymers are attached through amines on the glass surface.

40. The collection of claim 26, wherein a plurality of beads are comprised of a surface and hydroxyl groups of an acrylic acid polymer thereon, and polymers are attached through hydroxyl groups on the surface.

41. The collection of claim 26, wherein the polymers are oligodeoxyribonucleotides, a plurality of beads are comprised of a surface and a coating of an organic hydrophilic layer terminating in hydroxyl groups, and phosphates of the oligodeoxyribonucleotides are immediately linked to the hydroxyl groups.

17 42. The collection of claim 26, wherein the encoding system is selected from the group consisting of a magnetic system, a shape encoding system, a color encoding system, and combinations thereof.

43. A system for determining the nucleotide sequence of a target comprising:
(a) the collection of beads according to claim 27, wherein the attached oligonucleotides are complementary to substantially all possible oligonucleotide target sequences of a given length;
(b) an apparatus that sorts single beads that have bound an oligonucleotide target from single beads that have not bound an oligonucleotide target; and
(c) an apparatus that decodes by the encoding system to indicate the oligonucleotide sequence attached to a single bead.

44. The system of claim 43, wherein at least one of the targets is labeled with at least one detectable marker.

45. The system of claim 44, wherein the detectable marker is selected from the group consisting of fluorescent labels, radioisotopes, chemiluminescent compounds, bioluminescent sources, labeled binding proteins, heavy metal atoms, spectroscopic markers, magnetic labels, linked enzymes, chromogens, dyes, and spin labels.

18 46. The collection of claim 26, wherein the polymer attached to a single bead is an oligonucleotide probe having a given length.

47. A system for fingerprinting comprising:
(a) the collection of beads according to claim 46, wherein the attached oligonucleotide probes of a specific sequence are complementary to oligonucleotide targets;

- (b) an apparatus that sorts single beads that have bound an oligonucleotide target from beads that have not bound an oligonucleotide target; and
- (c) an apparatus that decodes the encoding system, to indicate the oligonucleotide sequence attached to a single bead.

48. The system of claim 47, wherein at least one of the targets is labeled with at least one detectable marker.

49. The system of claim 47, wherein the detectable marker is selected from the group consisting of fluorescent labels, radioisotopes, chemiluminescent compounds, bioluminescent sources, labeled binding proteins, heavy metal atoms, spectroscopic markers, magnetic labels, linked enzymes, chromogens, dyes, and spin labels.

50. The system of claim 47, wherein the oligonucleotide probes and the targets are greater than 25 nucleotides, and different fluorescent labels are the detectable markers.

51. The collection of claim 26, wherein the polymer is selected from the group consisting of enzyme binding sites and antibody binding sites.

52. A system for fingerprinting, comprising:

- (a) the collection of beads according to claim 26, wherein the polymer is a polypeptide able to specifically bind a target;
- (b) an apparatus that sorts single beads that have bound a target from beads that have not bound a target; and
- (c) an apparatus that decodes the encoding system to indicate the polypeptide sequence attached to a single bead.

1953. The collection of claim 26, wherein a plurality of beads are comprised of a TEFLON copolymer graft surface and a coating of a hydrophilic organic layer terminating in hydroxyl sites.

~~54~~² 54. The collection of claim ~~27~~², wherein a plurality of the attached oligonucleotides are comprised of at least one nucleotide analogue.

~~55~~² 55. The collection of claim 27, wherein a plurality of the different beads are reusable; thereby allowing specific interactions between the polymer attached to a single bead and its target to be disrupted, the single bead treated, whereby a renewed plurality of beads equivalent to an unused plurality of beads is made by such treatment.

~~56~~² 56. The collection of claim ~~27~~², wherein the given length of the oligonucleotide attached to a plurality of beads is selected from the group consisting of oligonucleotide sequences having a variable number of nucleotides.

57. A collection of fibers comprised of different fibers; wherein a plurality of the fibers have at least one polymer of a specific sequence attached thereto; and wherein a plurality of the fibers having at least one attached polymer are coded by an encoding system; and, the encoding system indicates the specific sequence of the polymer attached to a single fiber.

58. The collection of claim 57, wherein the polymer attached to a single fiber is an oligonucleotide having a given length; and wherein the oligonucleotide attached to a single fiber is selected from the group consisting of all possible oligonucleotide sequences having the same number of nucleotides.

59. The collection of claim 58, wherein at least about 25% of all possible oligonucleotide sequences having the same number of nucleotides are attached to a different single fiber.

60. The collection of claim 58, wherein at least about 70% of all possible oligonucleotide sequences having the same number of nucleotides are attached to a different single fiber.

61. The collection of claim 57 wherein the polymer is selected from the group consisting of polynucleotides and polypeptides.

62. The collection of claim 57, wherein the polymer is a protein selected from the group consisting of enzyme binding sites and antibody binding sites.

63. A system for determining the nucleotide sequence of a target comprising:

- (a) the collection of fibers according to claim 57, wherein the attached oligonucleotides are complementary to substantially all possible oligonucleotide target sequences of a given length;
- (b) an apparatus that sorts single fibers that have bound an oligonucleotide target from single beads that have not bound an oligonucleotide target; and
- (c) an apparatus that decodes the encoding system to indicate the oligonucleotide sequence attached to a single fiber.

64. The collection of the fibers of claim 57, wherein the polymer attached to a single fiber is an oligonucleotide probe having a given length.

65. A system for fingerprinting, comprising:

- (a) the collection of fibers according to claim 64, wherein the attached oligonucleotide probes of a specific sequence are complementary to oligonucleotide targets;
- (b) an apparatus that sorts single fibers that have bound an oligonucleotide target from fibers that have not bound an oligonucleotide target; and
- (c) an apparatus that decodes the encoding system to indicate the oligonucleotide sequence attached to a single fiber.

66. The collection of claim 57, wherein a plurality of fibers are comprised of a TEFLON copolymer graft surface and a coating of a hydrophilic organic layer terminating in hydroxyl sites.

67. The collection of fibers of claim 58, wherein a plurality of the attached oligonucleotides are comprised of at least one nucleotide analogue.

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68. The collection of claim 57, wherein a plurality of the different fibers are reusable; thereby allowing specific interactions between the polymer attached to a single fiber and its target to be disrupted, the single fiber treated, whereby a renewed plurality of fibers equivalent to an unused plurality of fibers is made by such treatment.

69. The collection of claim 58, wherein the given length of the oligonucleotide attached to a plurality of fibers is selected from the group consisting of oligonucleotide sequences having a variable number of nucleotides.--

REMARKS

Claims 26-69 are pending. These product claims are useful for the practice of the methods claimed in co-pending Appln. No. 09/362,089.

The amendments to the specification and claims find support throughout the original disclosure. The new claims are directed to an invention disclosed in the specification, but not originally claimed. It is submitted that no new matter has been added by these amendments.

In particular, the Examiner's attention is directed to the attached table entitled "Support for New Claims" showing support in the original specification for the new claims.

Many of the above amendments to the specification were entered as a preliminary amendment in parent U.S. Appln. No. 08/670,118. Given the number of amendments made to the specification, the Examiner in that case required a substitute specification. Therefore, to expedite prosecution of the present application, Applicants will be submitting a substitute specification with the amendments made in this Preliminary Amendment after an Official filing receipt has been received. At that time, new formal drawings will also be submitted.

An early and favorable examination on the merits is earnestly requested.

Respectfully submitted,

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Enclosure